

## **REMARKS**

By this amendment, the title to the specification has been amended. Claims 1-19 remain in the application. This application has been carefully considered in connection with the Examiner's Action. Reconsideration, and allowance of the application, is respectfully requested.

### **The Specification**

The specification was objected to for the following reason. The title of the invention is not descriptive. In response to the objection to the specification, as presented herein, the title has been amended to be clearly indicative of the invention to which the claims are directed. As now presented, the title now reads "IMAGE SENSOR WITH A PLURALITY OF PIXELS, PIXEL CIRCUIT AND METHOD". The objection to the specification is now believed overcome. Withdrawal of the objection is respectfully requested.

### **Allowable Subject Matter**

Claims 3-9, 11, 12 and 15-18 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Allowability of claims 3-9, 11, 12 and 15-18 is noted with appreciation. However, the claims have not been rewritten or amended. As discussed further herein below, it is believed that the base claims 1 and 14 are allowable over the art of record.

### **Rejection under 35 U.S.C. §102**

Claim 1 recites an image sensor comprising a plurality of pixels, each pixel comprising:

a light sensor element (12), a sensor voltage across the element varying depending on the light incident on the element (12);

a voltage amplifier (16) having gain magnitude greater than 1; and

a sampling capacitor (18) charged by the voltage amplifier,

wherein the voltage amplifier comprises first (40) and second (38) transistors in series, the input to the voltage amplifier being provided to the gate of the first transistor (40), and the output being defined by the junction between the first and second transistors (40,38),

and wherein each pixel further comprises a third transistor (49), the gate of the third transistor being connected to one terminal of the light sensor element (12), and the source of the third transistor (49) being connected to the gate of the first transistor (40).

Claims 1, 2 and 14 were rejected under 35 U.S.C. §102(b) as being anticipated by **Kozlowski** (US Patent 6,538,245). With respect to claim 1, Applicant respectfully traverses this rejection for at least the following reasons.

The PTO provides in MPEP § 2131 that

*"[t]o anticipate a claim, the reference must teach every element of the claim...."*

Therefore, with respect to claim 1, to sustain this rejection the **Kozlowski** reference must contain all of the above claimed elements of the respective claims. However, contrary to the examiner's position that all elements are disclosed in the **Kozlowski** reference, the latter reference does not disclose "...wherein the voltage amplifier comprises *first (40) and second (38) transistors* in series, the input to the voltage amplifier being provided to the gate of the *first transistor (40)*, and the output being defined by the junction between the *first and second transistors (40,38)*, and wherein each pixel further comprises a *third transistor (49)*, the gate of the *third transistor* being connected to *one terminal* of the *light sensor element (12)*, and the

source of the third transistor (49) being connected to the gate of the first transistor (40)” as is claimed in claim 1. Therefore, the rejection is not supported by the **Kozlowski** reference and should be withdrawn.

In contrast, the **Kozlowski** reference discloses a pixel amplifier in which switch transistors **M1** and **M2** initialize the circuit, a front-end amplifier comprises a source follower buffer amplifier formed by transistors **M4** and **M5**, and that a “[t]ransistor **M6** is a common gate amplifier that supplies an adjustable current to integration transistor  $C_{int}$ . In addition, the output of the source follower transistor **M4** is capacitively coupled by a series capacitor  $C_{CDs}$  to the gate of transistor **M6**. (See for example, Kozlowski at column 5, lines 18-42, and 56-59, and Figs. 1 and 2.) Accordingly, the Examiner’s position that Kozlowski teaches (Figs. 1 and 2) that the “voltage amplifier comprises first (M2) and second transistor (M6) in series, the input to the voltage amplifier being provided to the gate of the first transistor (M2), ... and wherein each pixel further comprises a third transistor (M4), ... the source of the third transistor (M4) being connected to the gate of the first transistor (M2)” is in error. The **Kozlowski** reference does not disclose “...wherein the voltage amplifier comprises *first* (40) and *second* (38) transistors in series, the input to the voltage amplifier being provided to the gate of the *first transistor* (40), and the output being defined by the junction between the *first and second* transistors (40,38), and wherein each pixel further comprises a *third transistor* (49), the gate of the *third transistor* being connected to *one terminal* of the *light sensor element* (12), and the source of the third transistor (49) being connected to the gate of the first transistor (40)” as is claimed in claim 1.

Accordingly, claim 1 is allowable and an early formal notice thereof is requested. Claim 2 depends from and further limits allowable independent claim 1 and therefore is allowable as well. Accordingly, the 35 U.S.C. § 102(b) rejection thereof has now been overcome.

Claim 14 is believed allowable over **Kozlowski** for at least the same reasons presented herein above for overcoming the rejection of claim 1. Accordingly, claim 14 is allowable and an early formal notice thereof is requested.

### **Rejection under 35 U.S.C. §103**

Claims 10 and 19 were rejected under 35 U.S.C. §103(a) as being unpatentable over **Kozlowski** (US Patent 6,538,245) in view of **Deepe** (US Patent 7,259,363). With respect to claims 10 and 19, Applicant respectfully traverses this rejection for at least the following reasons. Claim 10 depends from and further limits allowable independent claim 1 and therefore is allowable as well. Claim 19 depends from and further limits allowable independent claim 14 and therefore is allowable as well. Accordingly, the 35 U.S.C. § 103(a) rejection thereof has now been overcome.

Claim 13 was rejected under 35 U.S.C. §103(a) as being unpatentable over **Kozlowski** (US Patent 6,538,245) in view of **Chen** (US Patent 6,248,991). With respect to claim 13, Applicant respectfully traverses this rejection for at least the following reasons. Claim 13 depends from and further limits allowable independent claim 1 and therefore is allowable as well. Accordingly, the 35 U.S.C. § 103(a) rejection thereof has now been overcome.

### **Conclusion**

Except as indicated herein, the claims were not amended in order to address issues of patentability and Applicants respectfully reserve all rights they may have under the Doctrine of Equivalents. Applicants furthermore reserve their right to reintroduce subject matter deleted herein at a later time during the prosecution of this application or a continuation application.

It is clear from all of the foregoing that independent claims 1 and 14 are in condition for allowance. Claims 2-13 depend from and further limit independent claim 1 and therefore are allowable as well. Claims 15-19 depend from and further limit independent claim 14 and therefore are allowable as well.

The amendments herein are fully supported by the original specification and drawings; therefore, no new matter is introduced. An early formal notice of allowance of claims 1-19 is requested.

Respectfully submitted,

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